

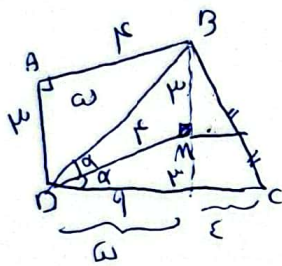
$$AOG \sim ABC \rightarrow \frac{S_{AOG}}{S_{ABC}} = \left(\frac{AO}{AB}\right)^2 = \frac{40}{100}$$

$$S_{BDE} = \frac{1}{3} \times S_{AOG}$$

$$S_{BDE} = \frac{S_{AOG}}{3} = \frac{40}{3}$$

$$S_{BCE} = S_{ABC} - S_{ADE} - S_{BDE} = 100 - 40 - \frac{40}{3} = \frac{160}{3}$$

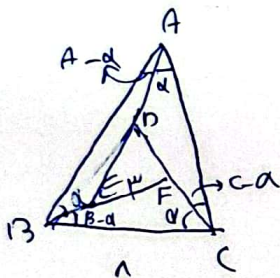
$$\frac{S_{BCE}}{S_{BDE}} = \frac{160}{40} = 4$$



$$AB = 5, AD = 3 \rightarrow BM = 3, DM = 5$$

$$\angle BDM = \angle BDC \rightarrow \angle BDM = \angle DMN = \alpha \quad \angle DMN = 90^\circ$$

$$\rightarrow BM = MP = 3, MC = \frac{1}{2} PC \Rightarrow MC = \frac{1}{2} \times 5 = 2.5$$

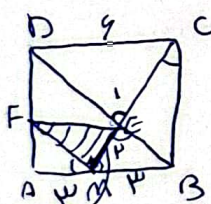


$$\angle FDE = C - \alpha + \alpha = C$$

$$\angle FED = B - \alpha + \alpha = B$$

$$\angle DEF = A - \alpha + \alpha = A$$

$$ABC \sim DEF \rightarrow \frac{F}{AB} = \frac{E}{AC} \Rightarrow AB = \frac{EA}{C}$$



$$\angle BCE = \angle AMF \Rightarrow \angle B = \angle A = 90^\circ \Rightarrow \angle B = \angle A = 90^\circ$$

$$\frac{9}{5} + 9 = FM^2 \Rightarrow FM = \frac{3\sqrt{10}}{2}$$

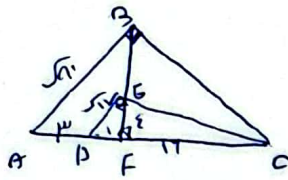
$$S = \frac{3\sqrt{10} \times \sqrt{10}}{2} = \frac{15}{2}$$

$$\frac{MB}{CD} = \frac{EM}{CE} = \frac{1}{2} \Rightarrow EM = CE \Rightarrow EM = \frac{3\sqrt{10}}{2}$$

$$\hat{E} = E$$

$$ACD = DAE \rightarrow AED \sim AEC \Rightarrow \frac{AD}{AE} = \frac{AE}{AC} \Rightarrow 100 + 100 = AE^2$$

$$AE^2 = 100 + 100 = 200 \Rightarrow 100 + 100 = 200 \Rightarrow 100 = 100$$



$$ED^2 = DE \times DC \rightarrow EC = 14$$

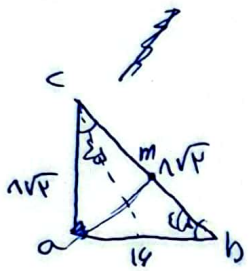
$$ABC \sim BAF \rightarrow \frac{FA}{AB} = \frac{AB}{AC} = \frac{FB}{BC} \rightarrow AB = \sqrt{10}$$

$$AB^2 + BC^2 = AC^2$$

$$10 + BC^2 = 50 \rightarrow BC = \sqrt{40}$$

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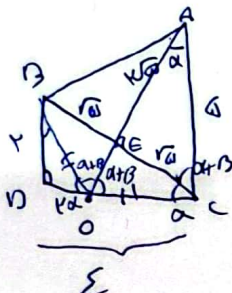


$$mb^2 + mcl^2 = d mcl^2$$

$$mb^2 = 2 \times 1^2 \rightarrow mb = \sqrt{10} \in \sqrt{10}$$

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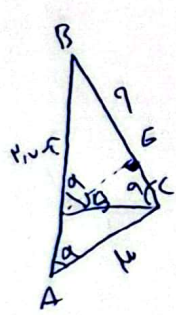


$$BC = \sqrt{10} = \sqrt{10} \rightarrow \angle BGC = \angle GEC \rightarrow EC = BE = \sqrt{10}$$

$$\frac{1}{\sqrt{10}} = \frac{2}{AE} \rightarrow AE = 2\sqrt{10} \quad S_{ABE} = \frac{AE \times EC}{2} = 10$$

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$$\triangle ABC: 11 \quad 11\sqrt{10} \quad 9$$

$$BCD: CD \quad 9 \quad BD$$

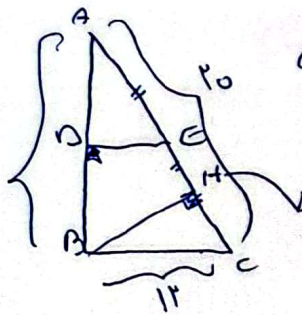
$$BOG: DE \quad BD \quad BE$$

$$\rightarrow BD = \frac{11}{11\sqrt{10}} \Rightarrow BD = \frac{1}{\sqrt{10}}$$

$$BD = 11$$

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$$AC = 10$$

$$ADE \sim ABH \rightarrow \frac{DE}{BH} = \frac{AE}{14}$$

$$S = \frac{14 \times 1}{2} = \frac{BH \times 10}{2} \rightarrow BH = 14$$

$$14^2 = AH \times 10 \rightarrow AH = 19.6$$

$$DE = \frac{14 \times 1}{14} = 1$$

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